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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,463	02/05/2002	Kazuyoshi Amami	56937-045	4920

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EXAMINER

ESTRADA, MICHELLE

ART UNIT PAPER NUMBER

2823

DATE MAILED: 12/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/062,463

Applicant(s)

AMAMI ET AL.

Examiner

Michelle Estrada

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.135(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 and 23 is/are allowed.
- 6) ☒ Claim(s) 1-5, 21, 22 and 24 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other:

DETAILED ACTION

Applicant's arguments filed 10/08/03 are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 21, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ono et al. (6,103,551), Cobbley et al. (6,329,832) and further in view of Izumi et al. (6,262,408).

Ono et al. disclose a connecting step of flip-chip mounting a semiconductor device (6) onto a substrate (9); a bonding step of bonding a region of said semiconductor device to a region of said substrate by means of an adhesive, each of said regions not being involved in electrical connection; and sealing said semiconductor device and said substrate by means of a sealing resin (2) (Col. 6, lines 1-25); wherein said connecting step includes electrically connecting an electrode pad (3) of the semiconductor device to a terminal electrode (8) of the substrate using an electrically conductive adhesive.

Ono et al. do not disclose a testing step of performing a test of electrical properties on said semiconductor device and said substrate that are connected

to each other; and separating said semiconductor device from said substrate after heating a bonding place of said adhesive up to a temperature higher than a glass transition point or a melting point of said adhesive if it is determined that said electrical properties are poor in said testing step, and sealing said semiconductor device and said substrate by means of a resin if it is determined that said electrical properties are good in said testing step.

Cobbley et al. disclose a testing step of performing a test of electrical properties on said semiconductor device and said substrate that are connected to each other (Col. 3, lines 1-3); and separating said semiconductor device from said substrate (Col. 3, lines 10-20) if it is determined that said electrical properties are poor in said testing step (Col. 6, lines 54-58), and sealing said semiconductor device and said substrate by means of a resin if it is determined that said electrical properties are good in said testing step (Col. 3, lines 32-34 and Col. 5, lines 34-48); wherein said bonding step includes curing said adhesive (Col. 2, lines 50-55).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ono et al. and Cobbley et al. to enable the formation of the semiconductor unit of Ono et al. to be performed according to the teachings of Cobbley et al. because one of ordinary skill in the art would have been motivated to look to alternative suitable methods of performing the disclosed formation of the semiconductor unit of Ono et al. and art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

Cobbley et al. do not specifically disclose that the separation step is done after heating a bonding place of said adhesive up to a temperature higher than a glass transition point or a melting point of said adhesive.

Izumi discloses heating the adhesive (7) to soften the adhesive and making a separation step when deficiency is found in either one of the two substrates (Col. 9, lines 35-42); wherein the electrically conductive adhesive comprises a thermoplastic; wherein said adhesive comprises a thermosetting resin (Col. 9, lines 19-22); and wherein said adhesive is cured at a temperature lower than said glass transition point of said adhesive in said bonding step.

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ono et al., Cobbley et al. and Izumi et al. to enable formation of the separation step.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ono et al., Cobbley et al. and Izumi et al. as applied to claims 1-4, 21, 22 and 24 above, and further in view of Kohara et al. (4,654,966).

The combination of Ono et al., Cobbley et al. and Izumi et al. does not disclose wherein said adhesive used in said bonding step comprises a low melting point metal.

Kohara et al. disclose that a low melting point metal is a suitable material for adhesive material (11); bonding flip-chips (6) mounted on the module base board (7) and metallic plates (12) (Col. 6, lines 24-30).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ono et al., Cobbley et al., Izumi et al. and Kohara et al. to enable formation of the adhesive layer.

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Ono et al., Cobbley et al., Izumi et al. and Kohara to enable the formation of the adhesive layer of the combination to be performed according to the teachings of Kohara et al. because one of ordinary skill in the art would have been motivated to look to alternative suitable methods of performing the disclosed formation of the adhesive layer of the combination and art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

Allowable Subject Matter

Claim 6 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7-14 and 23 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Estrada whose telephone number is (703) 308-0729 or (571) 272-1858. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794 or 571-272-1855. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



George Fourson
Primary Examiner
Art Unit 2823



MEstrada
December 18, 2003